

EM Headquarters



“The accomplishments across EM this year not only address some of our toughest environmental challenges, but also represent the culmination of years of hard work by our talented and experienced workforce. Major cleanup progress achieved this year, combined with our focus at EM Headquarters on supporting work in the field, expanding technology development, strengthening partnerships and maximizing cleanup dollars, will enable EM to build upon this momentum in the years to come.” – Assistant Secretary for Environmental Management Monica Regalbuto



Focusing on the Field

In 2016, a new management structure was implemented to strengthen support for work in the field at EM’s active cleanup sites. This new management structure puts the field sites squarely at the center of day-to-day activities in efforts to address inefficiencies and further assist them in performing their work in a safe, efficient and cost-effective manner.

The new management structure includes a new

Field Operations Office, led by Associate Principal Deputy Assistant Secretary Stacy Charboneau, and a set of field advocates.



Teaming with Cleanup Partners



Teaming with EM partners is critical as the cleanup community contends with the unavoidable challenge of trying to align technical issues and fiscal realities with the regulatory process. An informal dialogue with the U.S. Environmental Protection Agency and state regulators was launched to foster partnerships and information-sharing. EM also participated in the second annual National Cleanup Workshop hosted by the Energy Communities

Alliance, and a series of events for the Congressional Nuclear Cleanup Caucus. Efforts like these lead to better planning, greater accountability and aggressive achievable cleanup plans.



Developing New Technology



With a new Technology Development Office in place, EM launched a Science of Safety Initiative with a technology thrust in "nuclearized" robotics and remote systems. Robotics technologies can provide remote access to high-risk and hard-to-reach areas, reduce worker exposure to workplace hazards, and improve productivity. EM has teamed with expert roboticists and technologists in the national labs, universities, and other federal agencies.

A robotics demonstration at the Portsmouth Gaseous Diffusion Plant test bed allowed workers to see for themselves the relevancy and utility of these advanced technologies. EM is evaluating the use of robotics and other technologies such as sensors and virtual reality with an overall goal of enabling work to be done safer and smarter.



Maximizing Cleanup Dollars

EM continuously works to maximize efficiency both within the Department and its private sector teams through technology, investments in infrastructure that save money long-term and proper project prioritization. In 2016, EM launched an effort to identify areas for savings and reduce operational costs by 5 percent. As a result, EM sites were able to realize approximately \$100 million in cost savings in FY 2016.

Achieving Tangible Results in 2016

Highlights of 2016 achievements across the EM program include:

- Demolishing a complete gaseous diffusion plant for the first time at the East Tennessee Technology Park.
- Completing construction of the Salt Waste Processing Facility at Savannah River, which, once in operation, will significantly accelerate EM's ability to treat tank waste. Completing closure of an eighth high-level waste tank at Savannah River.
- Initiating demolition of the Plutonium Finishing Plant at Hanford, once one of the most dangerous buildings in the DOE complex.
- Packaging a total of 7,485 cubic meters of exhumed hazardous and radioactive waste at Idaho, satisfying a provision of a 2008 agreement among the DOE, state of Idaho and the U.S. Environmental Protection Agency (EPA).
- Relocating vitrified high-level waste to safe dry cask storage at the West Valley Demonstration Project as well as removing, packing and transporting 470 tons of materials for off-site disposal.
- Passing the halfway point of uranium mill tailings remediation effort at the Moab site.

Richland Operations Office



"With demolition of the Plutonium Finishing Plant underway, this was another productive year for the Richland Operations Office. I am fortunate to work with all the dedicated men and women who do so much every day to clean up the Hanford Site. I look forward to continuing and completing remaining projects along the River Corridor and transitioning our focus to the Central Plateau." – Richland Operations Office Manager Doug S. Shoop

Tearing Down Key Facility to Reduce Risks, Save Money

The start of [demolition at the Plutonium Finishing Plant](#) (PFP), one of the most hazardous facilities in the EM complex, was the most significant sign of visible progress this year – literally changing Hanford's skyline. PFP produced the majority of the plutonium buttons used in nuclear weapons production during the Cold War. After more than 20 years of preparatory work, open-air demolition has now begun with the aim of achieving slab-on-grade status by the end of 2017.



Protecting the Columbia River



The Richland workforce successfully tested and began transporting and installing equipment needed to move 35 cubic yards of highly-radioactive sludge away from the Columbia River.

Last year, the bulk of cleanup work was completed along the Columbia River Corridor. Building upon that achievement, workers exceeded the 2016 goals for preparing and retrieving waste from underground vertical pipes

in the 618-10 Burial Ground. Design and construction activities continued to prepare for remediation of the 324 Building which sits atop a highly contaminated waste site located 1,000 feet from the Columbia River.

More than 2.2 billion gallons of groundwater were treated at the 200 West Pump-and-Treat Facility—removing chemical and radiological contaminants.

**More than 2.2 billion
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Achieving Tangible Results in 2016

- Began demolition of the Plutonium Finishing Plant.
- Prepared to move highly-radioactive sludge away from the Columbia River.
- Exceeded cleanup goals at remaining River Corridor area sites.
- Drafted plan for the next set of major prime contracts.
- Increased access in River Corridor and developed land planning document.
- Upgraded and stabilized infrastructure to make future cleanup safer and more efficient.
- Established 2020 Vision addressing considerable amount of cleanup work on the Central Plateau and remaining infrastructure work.

Office of River Protection



"It's been a busy but exciting year for ORP; you can just feel the change of energy as WTP increases the amount of start-up and commissioning activities for review. Our Direct Feed Low Activity Waste initiative is coming together to deliver a safe and efficient way to start making glass." – Office of River Protection Manager Kevin Smith

Retrieving Waste from Underground Tanks

The Office of River Protection (ORP) made steady progress in addressing the 56 million gallons of radioactive waste stored in 177 underground tanks at Hanford. The age of the tanks, the makeup of the waste, and the proximity to the Columbia River make this a top priority – and puts it among the most challenging work within the EM program.



This year, ORP completed retrieval activities at the 16th single-shell tank at the Hanford tank farms. In addition, approximately 95 percent of the waste stored in the double-shell tank AY-102 has been retrieved and transferred to another double-shell tank. Approximately 300,000 gallons of double-shell tank waste storage space was created through ongoing evaporator campaigns.

Moving Forward on Waste Treatment Priorities



Design and construction of the Waste Treatment Plant (WTP) were significantly advanced this year. This facility will process and treat the waste taken from Hanford's tanks for eventual disposal.

With installation of the last major piece of equipment, the workforce made real progress on the Low Activity Waste Facility – a critical component of tank waste treatment.

Additionally, testing began on the full-scale prototype mixing vessel that is key to resolving several technical challenges associated with the Pretreatment Facility.

The Low-Activity Waste Pretreatment System (LAWPS) and the Effluent Management Facility (EMF) are another step closer to completion with progression through the 30 percent design phase this year. These two facilities are central to implementation of the Direct Feed Low Activity Waste initiative. LAWPS will receive tank waste, then remove cesium and solids, allowing the resulting low-activity waste to be vitrified at the Low Activity Waste facility in WTP. The EMF will treat liquid effluent created by the LAW facility's off-gas system during the vitrification process. The overall DFLAW approach is intended to begin waste treatment at Hanford as soon practicable, and also offers other benefits to aid the operation of the WTP.

Achieving Tangible Results in 2016

- Completing the 16th single-shell tank retrieval.
- Nearing completion of retrieval work at Tank AY-102.
- Increasing double-shell tank storage space.
- Advancing designs for key DFLAW components.
- Installing last major piece of equipment in the WTP Low Activity Waste Facility.
- Resolving technical challenges to ensure waste treatment success.

Savannah River Site



"This year was one of measurable progress and sustained success for SRS, capped off with completion of construction of the Salt Waste Processing Facility. We built upon our strong legacy of nuclear materials management, environmental risk, and national security objectives. Our 2016 achievements are the direct result of the dedicated SRS workforce, unique capabilities, disciplined operations and commitment to safety" – SRS Operations Office Manager Jack Craig

Accelerating Risk Reduction

Construction of the Salt Waste Processing Facility was completed in April – eight months ahead of schedule and \$60 million under budget. The SWPF will significantly accelerate the ability to treat the remaining radioactive tank waste at the site. With the commissioning phase underway, the facility is on track to operate in 2018.



The Defense Waste Processing Facility, the Nation's only vitrification plant that turns waste into safe stable glass, has produced over 4,100 canisters of waste and marked 20 years of successful operations in 2016.



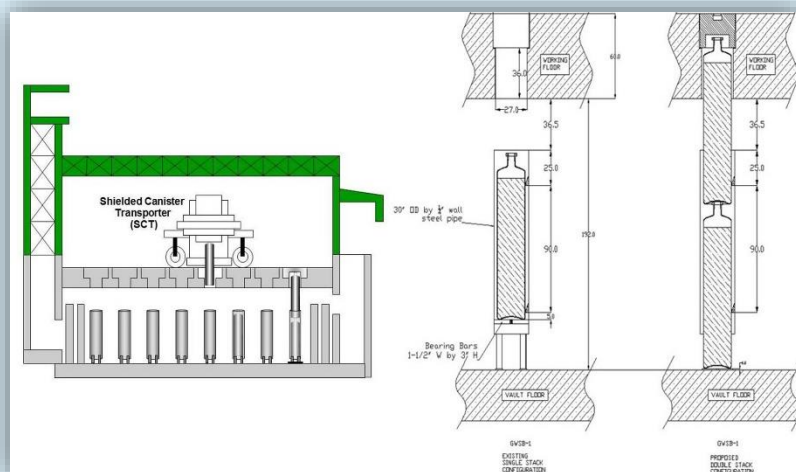
High-level waste Tank 12 was operationally closed ahead of schedule. During Tank 12 closure, nearly 600 trucks traveled onsite to deliver and pour 908,580 gallons of cement-like grout into the tank. This marked the eighth high-level waste tank at Savannah River to be closed.

Supporting National Security

This year brought the restart of a key step in H-Canyon's mission, focused on the second uranium cycle, the third and finishing processing step in H-Canyon's spent fuel processing campaign. This is critical to managing high-risk materials like spent nuclear fuel, producing clean energy and utilizing unique SRS capabilities for national security needs that cannot be met anywhere else. Plutonium down-blending was resumed in the K Area Complex that will result in the permanent disposal of six metric tons of surplus plutonium out of South Carolina in a form unusable for nuclear weapons.

Maximizing Cleanup Dollars

The first two radioactive canisters were double-stacked at the Glass Waste Storage Building 1. The Canister Double Stack Project safely doubles the building's storage capacity, avoiding any near-term expense of a third facility.



Achieving Tangible Results in 2016

- Completing construction of the Salt Waste Processing Facility ahead of schedule and under budget.
- Achieving operational closure of Tank 12.
- Maximizing cleanup dollars through the Canister Double Stack project.
- Restarting operational processes in H Canyon.
- Completing 20 years of successfully operating the nation's only active vitrification plant.
- Supporting national security objectives.

Oak Ridge



“Our employees performed tremendously this year – achieving first-of-a-kind accomplishments. We completed our goal of removing all gaseous diffusion buildings at the East Tennessee Technology Park (ETTP) by 2016, and we’re advancing planning and projects to enable larger scale cleanup at the Y-12 National Security Complex and Oak Ridge National Laboratory.” – DOE Oak Ridge Office of Environmental Management (OREM) Acting Manager Jay Mullis

Paving Way for Economic Growth Through Historic ETTP Success

This year, the Oak Ridge workforce achieved a feat never before realized worldwide – the safe removal all of all the former uranium enrichment buildings at a gaseous diffusion enrichment site (the East Tennessee Technology Park). This decades-long effort culminated in tear-down of the final building, K-27, in 2016. This success removes

environmental risks and improves safety in the area. It means having the ability to spend less on maintenance, surveillance, security and infrastructure costs. It is also paving the way for local economic development, opening up 300 acres of land that will be available for industrial use.

This historic achievement not only demonstrates that cleanup is a smart investment by achieving results in Tennessee, but also sets the stage for lessons learned at ETTP to be applied towards



realizing similar success at the Portsmouth and Paducah gaseous diffusion plants, as well as across the EM complex.

Maximizing Cleanup Dollars, Reducing Safety Risks



As part of the Excess Contaminated Facilities initiative, workers are characterizing equipment outside Alpha 4 at Y-12. It prepares for the equipment, which has potential mercury contamination and poses structural integrity risks, for removal.

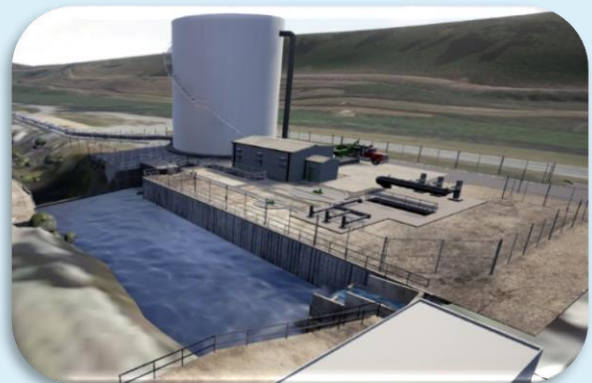
Oak Ridge began stabilizing high-risk facilities that are not scheduled for near-term demolition at the Y-12 National Security Complex and Oak Ridge National Laboratory. These projects will enhance safety and prevent the facilities from deteriorating as rapidly— lowering cleanup costs significantly, preventing the spread of contamination, and helping create safer environments for future crews.

Setting the Stage for Future Success

This year, the Oak Ridge workforce made significant progress towards continued success in 2017 and beyond. Oak Ridge is meeting goals to process and prepare the site's inventory of

transuranic waste for offsite disposal. This is a long-standing commitment to the State of Tennessee, and great strides are being made to have this waste out of the state when waste emplacement activities resume at the Waste Isolation Pilot Plant. To date, Oak Ridge has overseen repackaging and processing of 95 percent of the site's contact-handled waste and 83 percent of its remote-handled waste.

Oak Ridge is also in the advanced design stages for the Mercury Treatment Facility, and construction activities are expected to begin next year. The facility will open the door for safe demolition at Y-12 by providing a means to control potential mercury releases, and it will aid in working toward meeting all of regulatory limits.



An artist rendering of the headworks for the new Mercury Treatment Facility that OREM is designing at Y-12.

Achieving Tangible Results in 2016

- Completed first-ever cleanup and removal of a full gaseous diffusion complex at the ETP.
- Beginning initiative to stabilize high risk facilities at Y-12 and ORNL.
- Processing and preparing transuranic waste for offsite disposal.
- Doubling small business contracting goal from 7 percent to 15 percent.
- Advancing design of the Mercury Treatment Facility with construction poised to begin next year.

Idaho



“Our Idaho contractors and workforce have an excellent safety record, and we made significant progress in protecting the Snake River Plain Aquifer by exhuming buried waste, retrieving stored waste and moving forward with plans to treat the remaining liquid waste. We successfully consolidated our two prime EM contracts, awarded the consolidated contract and completed transition, all on time and without major issues.”—Jack Zimmerman, Deputy Manager for the Idaho Cleanup Project, DOE Idaho Operations Office

Focusing on Safe, Smooth Transition

When the contracts of both prime EM contractors in Idaho expired, the companies had achieved their best sustained safety performance of their entire contract periods. The Idaho Site successfully awarded and executed consolidation of those contracts. Fluor Idaho took over management of cleanup-related work in June and has since continued the tradition of excellent safety performance.

Protecting the Environment

All drums of stored transuranic waste were retrieved at the Advanced Mixed Waste Treatment Project. Originally, some



A worker holds a sign identifying the last of 14,550 drums to be removed in the cargo container extraction project at

65,000 cubic meters of waste were taken to Idaho from the now-closed Rocky Flats nuclear weapon production site. When the waste was brought to Idaho in the early 1970s, it was stored aboveground in a series of 14 storage cells later covered with soil. Significant progress was also made at the Radioactive Waste Management Complex where workers were able to exhume 0.39 acres of buried targeted transuranic waste – exceeding the annual goal for 2016. In addition, workers satisfied a provision of a 2008 agreement among the DOE, state of Idaho and the U.S. Environmental Protection Agency (EPA) by packaging a total of 7,485 cubic meters of exhumed hazardous and radioactive waste. The amount of waste exhumed is equivalent to nearly 36,000 55-gallon drums of material.

Positioning Key Project for Success

Start-up of the Integrated Waste Treatment Unit (IWTU) was incorporated into the new Fluor Idaho contract. The facility is designed to treat 900,000 gallons of radioactive liquid waste currently stored in underground tanks that was a byproduct of national defense programs that helped end the Cold War. Phase 1 of the Fluor Idaho assessment of the IWTU was completed and Phase 2 activities were initiated to develop and demonstrate operational parameters necessary to support Sodium-Bearing Waste treatment.



Achieving Tangible Results in 2016

- Completing retrieval of all drums of stored transuranic waste at AMWTP.
- Exhuming .39 acres of buried targeted transuranic waste and starting construction of the ninth and final Accelerated Retrieval Project enclosure under a small business contract.
- Providing technical support for contractor oversight and operational readiness review activities at the Waste Isolation Pilot Plant.
- Transitioning Nuclear Regulatory Commission-licensed activities to a new small business contractor.
- Awarding and executing consolidation of the two prime EM contracts safely, on-time and without significant issues.
- Incorporating Integrated Waste Treatment Unit start-up into new Fluor Idaho contract.
 - Completing Phase I of IWTU start-up plan,
 - Initiated Phase II activities

Waste Isolation Pilot Plant



"This has been a challenging, but productive, year at WIPP. I appreciate the dedication and hard work by our entire workforce, who have remained focused on the safe resumption of waste emplacement in WIPP and implementing major revisions to the National TRU Program." – Carlsbad Field Office Manager Todd Shrader

Nearing Completion of Recovery, Poised for Restart of Operations

Activities at WIPP in 2016 focused on the recovery of the Nation's only repository for defense-related transuranic (TRU) waste. Recovery efforts at WIPP included significant improvements to overall safety management programs, including areas of fire protection, radiological controls and emergency management, as well as worker training.

Installing the Interim Ventilation System (IVS) provided an additional 54,000 cubic feet-per-minute of airflow through the underground, essentially doubling the previous capacity.



Evaluators observe underground waste handling crews as they transport simulated waste drums during Cold Operations preparations at WIPP earlier this summer.

The combination of reduced ventilation, surface contamination in the far south end of the mine and competing priorities for ground control resources made it difficult to maintain those areas. After several rock falls occurred in prohibited areas of the far south end, WIPP officials decided to withdrawal from the area, citing worker safety concerns. WIPP has submitted a request to the New Mexico Environment Department for temporary authorization to close of the south end of the mine, where the panels have been filled with TRU waste for several years. When completed, the closure will increase the available airflow in other areas of the underground and reduce the footprint of the remaining contaminated area.

WIPP waste handling crews are in the final stages of preparations for resumption of waste emplacement operations. Overall recovery operations will culminate with emplacement of waste in the underground for the first time in nearly three years. WIPP recently completed all activities needed to restart the facility in early 2017.

Ensuring Safety and Success of Future Shipments

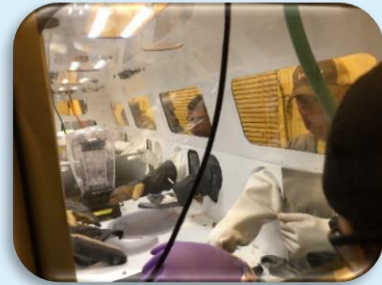
The enhanced National TRU Program Plan was designed to prevent a recurrence of the 2014 radiological release event. Protections under the enhanced plan include measures to:

- Perform additional verification of waste packaging and treatment compliance.
- Review each TRU waste stream of currently certified TRU waste containers to verify source documentation and identify any potentially reactive, corrosive, ignitable, and incompatible waste.
- Assess possible chemical combinations and avoid negative reactions, including potential effects from oxidizing chemicals that could occur in each waste stream.
- Ensure waste packaging and treatment activities at generator sites are conducted under adequate controls and waste information is accurately communicated.

Achieving Tangible Results in 2016

- Doubling the amount of ventilation in the WIPP Underground.
- Upgrading WIPP's emergency response capabilities with a new Emergency Operations Center.
- Enabling two-way communication and tracking of employees underground.
- Focusing on ground control activities in critical areas.
- Implementing Enhanced National TRU Program Plan.

Los Alamos



“Our commitment to safety, transparency and efficiency enabled us to make significant project- and program-related progress in 2016. We are proud of the success we achieved under the bridge contract as well as with the scope we sourced directly. We look forward to building on this momentum as we enter 2017 and build toward working with a dedicated environmental cleanup contractor under the Los Alamos Legacy Cleanup Contract.”—EM Los Alamos Field Office Manager Doug Hintze

Focusing on Priority Projects, Addressing Safety Risks

During its first full year in operation, the EM Los Alamos Office (EM-LA) made significant progress at the Chromium Project, which is aimed at addressing contamination in the regional aquifer beneath Sandia and Mortandad canyons. As a result of a substantial and sustained focus on Los Alamos National Laboratory’s top environmental cleanup priority, the project team obtained the permits and approvals necessary to implement two regulator-approved Chromium Project work plans, constructed infrastructure to support the interim measure, and continued field and laboratory studies.



An angled drilling rig was used to drill the injection well CrIN-4 for the Chromium Project. CrIN-4 was drilled at an angle from existing monitoring well pad location to reach the target location in the aquifer several hundred feet away.

Legacy waste management activities in 2016 centered on the remediated nitrate salt (RNS) drums located at Area G. To ensure the safety of the drums, the site employed additional wildfire mitigation measures and installed devices to eliminate any pressure build-up within the drums. Los Alamos is developing a plan to make the drums suitable for eventual disposal at the Waste Isolation Pilot Plant.



The remediated nitrate salt (RNS) drums are stored within Area G. High Efficiency Particulate Air (HEPA) filtration systems were installed on the lids of the RNS drums to eliminate any pressure build-up within the drums.



Fuel mitigation in Area G before and after



Teaming with Cleanup Partners

EM-LA teamed with the State of New Mexico to develop a new approach to remaining work at the site. The campaign-style approach focuses on aggressive, achievable progress and sets the stage for priority-based cleanup. The new consent order identifies specific cleanup projects, facilitates project coordination and promotes attention on cleanup activities and attainable results.

Achieving Tangible Results in 2016

- Teaming with the State of New Mexico on a landmark campaign-style cleanup plan.
- Reducing risks in and around salt nitrate drums and developed treatment drums so they are suitable for disposal at WIPP.
- Completing five out of six planned injection wells for the Chromium Project.
- Continuing pumping from boundary extraction well CrEX-1 and completing and utilizing well CrEX-3.
- Initiating first phase of piping installation for extraction-treatment-injection loop.
- Conducting studies to evaluate potential in-situ use of bio or chemical amendments for final chromium remediation.
- Removing contaminated soil from four legacy waste sites along the south-facing slopes of Los Alamos Canyon adjacent to the Los Alamos Townsite.
- Enhancing protection at the Los Alamos County Airport Landfill by completing construction of a robust cover system that securely segregates the waste below.

Portsmouth



"From nearing deactivation of a building that contained highly enriched material to initiating work in another to progress on an On-Site Waste Disposal Facility, we are demonstrating the ability of the Portsmouth team to advance the decontamination and decommissioning mission toward final closure." – Portsmouth/Paducah Project Office Manager Robert Edwards

Investing in D&D Mission is Producing Results

The first 30-acre uranium enrichment process building that contributed to our national defense and to American-made power production, is approaching a demolition-ready state. Workers completed removal of more than 7,000 components from the X-326 building this year.

Deactivation work also began in Building X-333, the second of the former uranium enrichment process buildings at the site.

Infrastructure work on the On-Site Waste Disposal Facility moved forward to ensure capacity exists when demolition activities begin at Portsmouth.



Equipment is lowered from the cell floor to the staging area of the X-326 Building for shipment.

Demonstrating Science of Safety Technology



EM's Science of Safety Initiative is leveraging expertise in advanced robotics to improve safety, enhance the quality of life for the workforce and boost cleanup progress. Two dozen technologies were demonstrated at Portsmouth as part of a Robotic Test Bed. The demonstrations were conducted by site workers who provided feedback being used to refine and evaluate technologies for possible deployment in the field.

Teaming with Cleanup Partners

Portsmouth engages with stakeholders to ensure community values are considered as cleanup is planned. The site hosted a variety of outreach activities aimed at getting students and educators excited about STEM. This both improves understanding of cleanup and helps grow the next generation workforce.

Achieving Tangible Results in 2016

- Nearing demolition-ready state at first uranium process building and initiating deactivation of the second building.
- Moving forward on construction of the On-Site Waste Disposal Facility.
- Removing approximately 250 pounds of contaminants from more than 32 million gallons of groundwater.
- Maximizing cleanup dollars by right-sizing key infrastructure.
- Helping develop nuclear workforce of tomorrow.
- Demonstrating technologies to increase cleanup safety and efficiency.

Paducah



"In 2016, new approach at the C-400 building allowed workers to advance meaningful deactivation while positioning the site to fully address the major source of groundwater contamination years ahead of previous projections." – Portsmouth/Paducah Project Officer Manager Robert Edwards

Maximizing Cleanup Dollars



C-746-B warehouse before.



C-746-B warehouse after.

Final demolition of 11 inactive facilities was completed and the resulting scrap metal was recycled to offset the cost of the project.

In the large uranium enrichment process buildings, workers finished removing lubrication oil and oil from other components, resulting in the largest reduction of PCBs in the site's recent history. The lubrication oil was reused for rinsing electrical equipment. This worker-developed innovation saved nearly half-a-million dollars.

This worker-developed innovation saved nearly half-a-million dollars.

Efforts also continued to remove millions of gallons of contaminants from the buildings and on-site storage which reduces risks and boosts overall cost effectiveness.

DOE also was focused on the C-400 Cleaning Building—the major source of historical groundwater contamination at the site. This year, workers isolated electrical equipment and removed asbestos and other waste from this facility, making this project one of the top priorities for PPPO in 2016 and beyond.

Teaming With Cleanup Community



The Department of Energy transferred several assets to the Paducah Area Community Reuse Organization, which uses the revenue for regional economic development. Expanding its community outreach efforts, Paducah launched a public tours program that attracted more than 500 people from 16 states. The site fostered educational, mentorship and internship programs to spotlight real-world STEM applications and next-generation workforce opportunities.

Achieving Tangible Results in 2016

- Saving money by reusing and recycling materials.
- Removing hazardous material and demolishing facilities to reduce surveillance and maintenance costs in the long-term.
- Accelerating deactivation of the C-400 facility, the historical source of groundwater contamination at the site.

West Valley Demonstration Project



"The West Valley team marked a series of historic cleanup achievements in 2016. They also earned the Voluntary Protection Program Star Award for the second consecutive year and have worked more than 1,400 days without a lost time work accident. I am very proud of their accomplishments and look forward to working together in 2017 to begin demolition of the Main Process Plant Building and Vitrification Facility."—West Valley Demonstration Project Director Bryan Bower

Reducing Risks



The West Valley workforce contributed to stabilizing and securing waste, and reducing risks to people and the environment this year by completing the high-level waste canister relocation project and transporting the vitrification melter and its components for off-site disposal.

Workforce marks completion of high-level waste canister relocation project

West Valley became the first site to put vitrified high-level waste in Nuclear Regulatory Commission-approved shipping containers and safely relocate those shipping containers into dry cask storage. This took years of work, the engineering of infrastructure upgrades, purchase of specialized equipment, and intensive worker training. This investment will ultimately allow for demolition of the Main Plant Process Building.



Additionally, the West Valley melter and two additional vitrification components—more than 500 tons altogether—safely arrived at Waste Control Specialists in Texas for disposal. This marks the first time the Department has shipped for disposal a waste package that has undergone the Waste Incidental to Reprocessing evaluation

and determination process. This accomplishment provides further proof of EM's ability to safely manage waste of this nature.

Maximizing Cleanup Dollars

Continued D&D progress and waste management at West Valley demonstrates that the federal investment in cleanup is money well spent. Ongoing efforts will ultimately reduce maintenance and security costs associated with the site's aging facilities and free up resources for additional cleanup.

Working Safely

West Valley's commitment to safety is clear with over 2.4 million safe work hours on the books without a lost-time work accident or illness. The West Valley workforce earned the DOE Voluntary Protection Program (VPP) Star of Excellence Award again this year.

**Over 2.4 million safe
work hours on the
books.**

Achieving Tangible Results in 2016

- Completing the High-Level Waste Canister Relocation Project.
- Loading and transporting three large, low-level waste packages containing components used during vitrification to a permanent disposal site located in Texas.
- Deactivation of 97% of the Vitrification Facility in preparation for demolition.
- Deactivation of 58% of the Main Plant Process Building.
- Reconfiguring infrastructure in preparation for upcoming building demolitions.
- Earned the Voluntary Protection Program Star of Excellence Award.

Nevada National Security Site



"Positive working relationships with stakeholders, including US Air Force, Nevada Division of Environmental Protection, Consolidated Group of Tribes and Organizations, Nevada Site Specific Advisory Board and the public, once again made it possible this year to work together toward our common goals of site remediation and protection of the public, environment and workers." – Scott Wade, Assistant Manager for Environmental Management, Nevada Field Office

Focusing on Priority Projects Results in Major Success

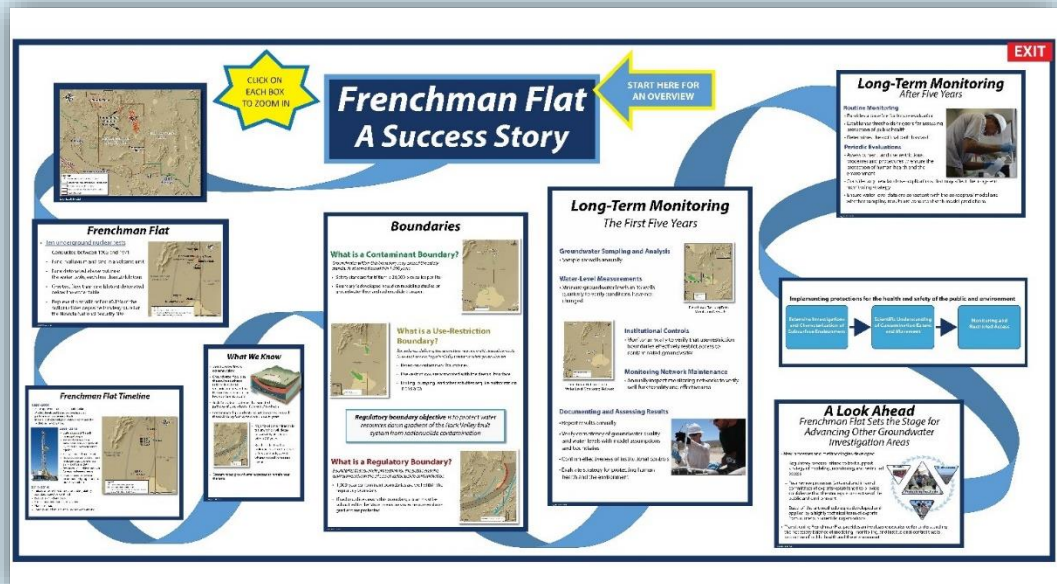
In 2016, workers completed remediation at the site of a 1963 plutonium dispersion test at the Nevada Test and Training Range, north of the Nevada National Security Site. After more than 20 years of hard work and cross-agency collaboration, remediation efforts were completed at the Double Tracks location to meet current United States Air Force (USAF) land-use requirements and the approval of the State of Nevada.



Technicians processed samples at the Double Tracks site

Transitioning into New Phase of Key Project

This year, the State of Nevada approved transition of the Frenchman Flat groundwater characterization area to long-term monitoring – an area where 10 underground nuclear tests were conducted between 1965 and 1971. This approval follows decades of scientific investigations and is a first for the groundwater characterization program. Frenchman Flat now enters the important final stage that ensures the protection of offsite public water sources for both current and future generations.



Groundwater characterization well ER-3-3 was drilled to a depth of 3,193 feet below the ground surface of Yucca Flat in February.

Teaming with Cleanup Partners

Close collaboration with the State of Nevada and other stakeholders was instrumental for all 2016 accomplishments. Frequent and transparent interactions with cleanup partners is a priority for the NNS, resulting in trusting relationships that facilitate continued success.

In 2016, the Site regularly engaged local, state, and regional communities during the revision process for waste acceptance criteria – a document that outlines the requirements, terms and conditions under which waste is accepted for disposal.

At the recommendation of the NNSAB, the site developed a new outreach [video](#) which provides stakeholders with a better understanding of what the department is doing to ensure public protection of groundwater affected by historic underground nuclear tests.

The USAF and the Nevada Site-Specific Advisory Board were involved in selecting a path forward for restoration at Clean Slate II, a historical testing location. Additionally, valuable expertise from the Consolidated Group of Tribes and Organizations was sought to aid ongoing revegetation efforts at the Area 5 Radioactive Waste Management Complex.

Achieving Tangible Results in 2016

- Completing closure of the Double Tracks plutonium dispersion test area.
- Receiving approval to transition the Frenchman Flat groundwater characterization area into long-term monitoring.
- Drilling of four new groundwater characterization wells in the Pahute Mesa and Yucca Flat groundwater characterization areas as part of efforts to ensure the safety of public water sources.
- Disposing of more than 1 million cubic feet of low-level, mixed low-level and classified waste at the Area 5 Radioactive Waste Management Site.
- Prioritizing communication and transparency with cleanup partners and stakeholders.

EM Small Sites

Moab

"Reaching the halfway mark of moving the tailings was a huge milestone for the Moab Project this year and it was done safely by our dedicated workforce. The Project continues to make progress toward completing our mission by shipping two trains a week and protecting the Colorado River." – Federal Project Director Donald Metzler.

Achieving Tangible Progress in 2016 Toward Protecting the Colorado River



Shipping almost 582,000 tons of uranium mill tailings from Moab to the Crescent Junction disposal site in 2016, Moab has now exceeded the halfway mark having shipped over 8 million tons over the life of the project.

Excavating 500,000 cubic yards of the next phase from the disposal cell at Crescent Junction enables continued shipping of uranium mill tailings from Moab next year.





Refurbishing tailing shipping containers by adding exterior panels and internal coatings. These efforts, coupled with the investment in 22 new containers, set the stage for continued safe cleanup.

Removing the evaporation pond on the tailings pile allows the excavation of tailings in that area could from the top of the pile down to ensure stability. The extracted groundwater once held in the evaporation pond is now in a relocated storage tank and continues to be used for dust control on the pile. Continuing freshwater injection wells as another means to protect the Colorado River.



Energy Technology Engineering Center

"I am proud of our team's work toward preparing the Draft Environmental Impact Statement for remediation of Area IV and the Northern Buffer Zone. The ETEC site performed admirably and had a great year towards completing our NEPA analysis as well as our regulatory commitments for soils and groundwater." – ETEC Director John B. Jones

Achieving Tangible Progress in 2016 toward Groundwater Monitoring, Cleanup Plans



Work at ETEC this year focused on performing the necessary analyses for the Draft Environmental Impact Statement under development.

Eleven new groundwater monitoring wells were installed in a safe and timely manner – moving the site towards final remedy decisions. In order to broaden understanding of the nature and extent of groundwater on site, the Draft Fate and Transport Model have been

completed.

The site also received approval on Critical Decision-1 for D&D of the remaining 18 DOE buildings.

Separations Process Research Unit (SPRU)

We have worked 689 days and 559,228 total safe work hours without a lost-time accident, as our workforce makes progress towards demolishing two Cold War-era national defense facilities.” – Federal Project Director Steve Feinberg

Achieving Tangible Progress in 2016 toward Demolition of Cold War-Era Facilities

SPRU workers began open air demolition and completed the demolition of the above-grade structure of the G2 Facility with no spread of contamination. The demolition effort included removing 19,379 linear feet of contaminated piping, 15,611 linear feet of contaminated tubing, 4,256 linear feet of conduit and 1,297 LF of ductwork.



Pictured here is completing preparations for demolition of the H2 Facility under an enclosure. All seven vaults are now demolition ready and all radiological sampling to date is below cleanup criteria.

Lawrence Berkeley National Laboratory Old Town Demolition

"It was great to watch the skyline change in the heart of the laboratory this past year with demolition of the three buildings. The Old Town team continues to make progress towards completing the Phase I cleanup and looks forward to making available the land for future Office of Science mission growth." – Federal Project Director Kevin Bazzell

Phase 1 Project

Achieving Tangible Progress in 2016 Toward a Safe and Stable State



Old Town 2014

The Old Town team removed the former Building 5 waste processing yard slab, underground utilities and associated contaminated soil.

The site has received necessary approval from the Environmental Protection Agency of PCB cleanup application packages for the Building 52/52A and 16/16A areas.

Deactivation and demolition of Buildings 5, 16 and 16A have now been completed. The Building 5 floor slab and associated contaminated soil has been removed.



Old Town 2016